

JAPANESE

[JP,08-186605,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE DESCRIPTION OF
DRAWINGS DRAWINGS

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CLAIMS

[Claim(s)]

[Claim 1] It connects with a packet exchange network and becomes two or more migration communication terminals in which packet communication is possible from two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which it is the correspondence procedure applied to migration packet communication system, and said communication terminal moves, and controls the area which carries out a ** area is changed, the exchange of a moved material It is the migration packet correspondence procedure which transmits control information required for packet communication with said communication terminal which moved to the exchange of a migration place, and is characterized by the exchange of said migration place continuing packet communication with said communication terminal which moved based on said transmitted control information.

[Claim 2] It connects with a packet exchange network and becomes two or more migration communication terminals in which packet communication is possible from two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which is the correspondence procedure applied to migration packet communication system, moves while said communication terminal receives a packet, and controls the area which carries out a ** area is changed, the exchange of a moved material It is the migration packet correspondence procedure to which the packet which is not sent [which should transmit to said communication terminal which moved] is transmitted to the exchange of a migration place, and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved].

[Claim 3] It is the migration packet correspondence procedure according to claim 2 to which the exchange of said migration origin transmits to the exchange of said migration place with the packet whose control information required for packet communication with said communication terminal which moved is not sent [said], and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved] based on said transmitted control information.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] This invention is used for the migration packet communication system which performs mobile communication by packet switching, and relates to a suitable migration packet correspondence procedure.

[0002]

[Description of the Prior Art] In recent years, in the field of mobile communication, various development of the migration packet communication system which performs data communication by packet switching is carried out. Drawing 4 is the block diagram showing the example of a configuration of the conventional migration packet communication system. The conventional system is constituted by the home exchange 30, two or more subscriber exchanges (only henceforth the exchange) 31 and 32 connected to this home exchange 30, and two or more movable communication terminals 11 and 12, and .. as shown in this drawing. Each exchanges 31 and 32 and have the controllable area 21 and 22 and .. for communication terminals 11 and 12 and radio with .., respectively, and each communication terminals 11 and 12 and .. move between these area to arbitration. Moreover, the positional information which shows to which area each communication terminal is carrying out the ** area is brought together in the home exchange 30 through each exchanges 31 and 32 and .., and is managed at this home exchange 30.

[0003] Drawing 5 is the block diagram showing the configuration of the exchange 31 in the above-mentioned system (however, each exchanges 31 and 32 and are the same configurations.). Packet transmitter-receiver 31a to which the exchange 31 transmits and receives a packet among the home exchanges 30 as shown in this drawing. While dividing communication terminals 11 and 12 and the packet which should transmit to per segment To a packet communication terminals 11 and 12 and the segment received from A ***** packet assembly / division section 31b, It consists of segment transmitter-receiver 31e with packet communications control section 31c which controls packet communication, 31d of segment storage sections which memorize the non-sent segment of a packet, communication terminals 11 and 12, and which delivers and receives a segment by the radio signal in between.

[0004] In the above configurations, when transmitting a packet to another communication terminal from a certain communication terminal, after wireless transmission is carried out per segment at the exchange of ** area area and the data generated in the communication terminal of a transmitting agency are assembled by the packet at this exchange, they are sent to the home exchange 30. The home exchange 30 pinpoints the area as for which the communication terminal of a transmission place carries out a ** area, and transmits a packet to the exchange which manages this area. The exchange which received the packet divides the packet concerned per segment, and does wireless transmission of these to the communication terminal of a sequential transmission place. In this way, a packet is sent to the communication terminal of a transmission place, and transmission is completed when the communication terminal concerned returns an acknowledge signal.

[0005] Moreover, when it moves to the area 22 which the subordinate of another exchange 32 has from the area 21 which the subordinate of the exchange 31 concerned has while the

communication terminal 11 received the packet from the exchange 31 as shown in drawing 6 , a communication terminal 11 notifies carrying out the ** area to the area 22 concerned to the exchange 32 of a migration place. The exchange 32 sends to the home exchange 30 by making this information into positional information. Then, if there is transmission of a packet from other communication terminals to this communication terminal 11, the home exchange 30 will transmit a packet to a communication terminal 11 through the exchange 32.

[0006] Here, with reference to the sequence diagram shown in drawing 7 , actuation of the conventional system shown in drawing 6 is further explained to a detail. In drawing 7 , the exchange 31 divides the data packet 1 sent to a communication terminal 11 from the communication terminal 12 of a transmitting agency per segment, and transmits to a communication terminal 11 one by one from the segment 1-1 generated first. While starting the time count according [the exchange 31] to a timer (illustration abbreviation) at this time, the non-sent segment is memorized until the confirmation-of-receipt signal of the completion of reception is acquired from a communication terminal 11. On the other hand, a communication terminal 11 will return the confirmation-of-receipt signal about the segment 1-1 concerned, if the above-mentioned segment 1-1 transmitted from the exchange 31 is received.

[0007] When ** area area is changed before a communication terminal 11 receives the consecutive segment 1-2 here, it becomes impossible to receive the data after the segment 1-2 concerned. On the other hand, since the confirmation of receipt after segment 1-2 is not obtained and the count of the above-mentioned timer passes the deadline of the exchange 31, it regards it as that in which a communication terminal 11 does not carry out a ** area to the area concerned, and cancels the non-sent segment after segment 1-2.

[0008] On the other hand, the exchange 32 which manages the area of a migration place notifies the home exchange 30 of transmitting the location registration demand from a communication terminal 11 to the home exchange 30, and the communication terminal 11 carrying out the ** area to the area of a local station. Moreover, the exchange 32 newly creates packet communications control information required to control packet communication with a communication terminal 11. If the data packet 2 addressed to communication terminal 11 is received from the communication terminal 12 of a transmitting agency after the home exchange 30 updates the positional information of a communication terminal 11 according to the above-mentioned location registration demand, it will transmit this packet 2 to the exchange 32 of a migration place. If the above-mentioned data packet 2 is received, the exchange 32 will divide this packet 2 per segment, and will transmit to a communication terminal 11 from the first segment 2-1.

[0009] A communication terminal 11 recognizes that reception of the above-mentioned data packet 1 is not completed by reception of this segment 2-1, and requires resending of a data packet 1 of the exchange 32 while it will return that confirmation-of-receipt signal, if the above-mentioned segment 2-1 is received. According to this, the exchange 32 makes demands for resending of a data packet 1 on the home exchange 30, and the home exchange 30 demands resending of a data packet 1 from the communication terminal 12 of a transmitting agency further.

[0010] And if a data packet 1 is transmitted to the exchange 32 through the home exchange 30 from a communication terminal 12, the exchange 32 will divide the data packet 1 which received per segment, and will resend to a communication terminal 11 from the first segment 1-1. In this way, completion of resending of a data packet 1 resumes transmission of a data packet 2.

[0011]

[Problem(s) to be Solved by the Invention] By the way, in the above-mentioned conventional system, when it moves between area and ** area area is changed while the communication terminal 11 received data as mentioned above, the exchange 31 of a moved material will eliminate the packet which is not sent [which transmission to a communication terminal 11 has not completed]. For this reason, from the communication terminal 12 which is the transmitting origin of a packet, in response to resending of the packet which is not sent [above-mentioned], the exchange 32 of a migration place needed to redo transmission to a communication terminal 11, and had the problem that the effectiveness of data transfer was bad. Moreover, the exchange

of various information with a communication terminal 11 or the home exchange 30 was needed, and the exchange 32 of a migration place had the problem of causing increase of traffic in order to newly create the packet communications control information about a communication terminal 11.

[0012] This invention was made under such a background, reduces traffic, and aims at offering the migration packet correspondence procedure which makes efficient data transfer possible.

[0013]

[Means for Solving the Problem] In order to solve the technical problem mentioned above, invention according to claim 1 It connects with a packet exchange network and becomes two or more migration communication terminals in which packet communication is possible from two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which it is the correspondence procedure applied to migration packet communication system, and said communication terminal moves, and controls the area which carries out a ** area is changed, the exchange of a moved material Control information required for packet communication with said communication terminal which moved is transmitted to the exchange of a migration place, and the exchange of said migration place is characterized by continuing packet communication with said communication terminal which moved based on said transmitted control information.

[0014] Moreover, two or more migration communication terminals in which invention according to claim 2 has possible packet communication, It connects with a packet exchange network and consists of two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which is the correspondence procedure applied to migration packet communication system, moves while said communication terminal receives a packet, and controls the area which carries out a ** area is changed, the exchange of a moved material The packet which is not sent [which should transmit to said communication terminal which moved] is transmitted to the exchange of a migration place, and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved].

[0015] Moreover, invention according to claim 3 is transmitted to the exchange of said migration place in invention according to claim 2 with the packet whose control information which the exchange of said migration origin needs for packet communication with said communication terminal which moved is not sent [said], and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved] based on said transmitted control information.

[0016]

[Function] It becomes unnecessary for the exchange of a migration place to newly create control information required to perform packet communication with the communication terminal which has moved from the area of an other station according to invention according to claim 1. In order to create the above-mentioned control information, it becomes unnecessary thereby, for the exchange of a migration place to perform the exchange of the exchange of a communication terminal or a high order which has moved, and various information.

[0017] Moreover, according to invention according to claim 2, the exchange of a migration place transmits the packet which is not sent [which was transmitted from the exchange of a moved material] to the communication terminal concerned which has moved. It becomes unnecessary thereby, to resend a non-sent packet to the communication terminal of a transmission place from the communication terminal of a transmitting agency among the packets sent to the exchange of a moved material.

[0018] Moreover, according to invention according to claim 3, in addition to the operation by invention according to claim 2, the operation by invention according to claim 1 is also done so.

[0019]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

(1) The block diagram 1 of an example is a block diagram showing the configuration of the migration packet communication system by one example of this invention. In this drawing, the same sign is given to the part which is common to each part of the conventional example shown in drawing 4 and drawing 6, and explanation is omitted. Moreover, the point that the example shown in this drawing differs from the above-mentioned conventional example is in the place where exchange 31' of a moved material transmits the segment which is not sent [packet communications control information and] to exchange 32' of a migration place, when it moves to the area which the subordinate of exchange 32' has while the communication terminal 11 received the packet (however, segment unit) transmitted from exchange 31'.

[0020] Drawing 2 is the block diagram showing the configuration of exchange 31' by this example (however, each exchange 31', 32', and are the same configurations.). The point that exchange 31' shown in this drawing differs from the exchange 31 which showed drawing 5 is in the place equipped with 31f of packet related information transmitter-receivers holding such information which delivered and received the segment which is not sent [packet communications control information and] among other exchanges, and was received. About other parts, since it is the same as that of each part shown in drawing 5, the same sign is attached and explanation is omitted.

[0021] (2) Explain actuation of this example below actuation of an example with reference to the sequence diagram shown in drawing 3. In drawing 3, exchange 31' divides the data packet 1 sent to a communication terminal 11 from the communication terminal 12 of a transmitting agency per segment like the above-mentioned conventional example, and carries out wireless transmission from the segment 1-1 generated first to a communication terminal 11 one by one. At this time, exchange 31' memorizes the non-sent segment until the confirmation-of-receipt signal of the completion of reception is acquired from a communication terminal 11. On the other hand, a communication terminal 11 will return the confirmation-of-receipt signal about the segment 1-1 concerned, if the above-mentioned segment 1-1 transmitted from exchange 31' is received.

[0022] If it moves to the area which the subordinate of exchange 32' has before a communication terminal 11 receives the consecutive segment 1-2 here, exchange 32' of a migration place will notify the home exchange 30 of transmitting the location registration demand from a communication terminal 11 to the home exchange 30, and the communication terminal 11 carrying out the ** area to the area of a local station. And the home exchange 30 notifies that the exchange which manages the area of the migration origin of a communication terminal 11 is exchange 31' to exchange 32' with a location registration response, after updating the positional information of a communication terminal 11 according to this location registration demand.

[0023] According to this notice, exchange 32' requires a transfer of packet related information from exchange 31' of a moved material. According to this demand, exchange 31' transmits the non-sent segment after the packet communications control information about a communication terminal 11, and segment 1-2 to exchange 32'. Exchange 32' carries out wireless transmission of the non-sent segment to a communication terminal 11 one by one based on the acquired packet communications control information. In this way, whenever a communication terminal 11 receives a segment, it returns a confirmation-of-receipt response to exchange 32', and the arrival of a non-sent segment completes it.

[0024] On the other hand, if the data packet 2 addressed to communication terminal 11 is received from the communication terminal 12 which is the transmitting origin of a packet after the home exchange 30 updates the positional information of a communication terminal 11, it will transmit this packet 2 to exchange 32' of a migration place. If the above-mentioned data packet 2 is received, exchange 32' will divide this packet 2 per segment, and will carry out wireless transmission from the first segment 2-1 to a communication terminal 11.

[0025] Thus, when according to this example a communication terminal 11 moves during reception of a packet between area and changes ** area Since the segment which is not sent [which has not received a message in a communication terminal 11 among the packets transmitted to exchange 31' of a moved material] is transmitted to exchange 32' of a migration place from this exchange 31' It becomes unnecessary to resend from the communication

terminal 12 of transmitting [arrival-of-the-mail the packet which is not completed / concerned] origin, and efficient data transfer becomes possible.

[0026] Moreover, since packet communications control information is transmitted to exchange 32' of a migration place from exchange 31' of a moved material, in order to newly create packet communications control information at exchange 32' of a migration place, it becomes unnecessary to exchange the home exchange 30, a communication terminal 11, and various information, and traffic can be reduced as a result.

[0027] (3) This invention is a thing which is an example of modification and which is not limited to the above-mentioned example, for example, includes the following examples of modification.

** Like the above-mentioned example, only a non-sent segment may not be transmitted to exchange 32' of a migration place from exchange 31' of a moved material, but the whole non-sent packet may be transmitted in a packet unit. In this case, what is necessary is to divide the packet which is not sent [which was transmitted in exchange 32' of a migration place] per segment, and just to carry out wireless transmission to a communication terminal 11.

[0028] ** Although the method which divides a packet per segment further and transmits it as a wireless interface between the exchange and a communication terminal was adopted in the above-mentioned example, this invention is not limited to such a method, but can apply the packet itself also to the method which carries out wireless transmission. In this case, naturally between the exchanges is transmitted to non-sent data per packet.

[0029] That is, this invention will not be limited to the unit of data, if the data divided into the predetermined unit are delivered and received between the exchange and a communication terminal. Therefore, the word of the "packet" used for the claim does not mean the packet of the narrow sense used in the example, and is a large concept of "the data divided into the predetermined unit."

[0030] ** The home exchange 30 does not notify that the exchange which manages the area of a moved material is exchange 31' to exchange 32' of a migration place like the above-mentioned example, but you may make it a communication terminal 11 notify.

[0031] ** Like the above-mentioned example, the home exchange 30 may not manage the positional information of each communication terminal, but you may constitute so that another station which is different in the home exchange 30 may manage the positional information of each communication terminal. In this case, the home exchange 30 becomes possible [recognizing the ** area area of a communication terminal] by receiving a notice from the station which manages the above-mentioned positional information, or asking the station concerned.

[0032] ** Not only the network configuration that makes the home exchange 30 like the above-mentioned example top-most vertices but each exchange 31' and 32' are connected with other networks through the gateway exchange, and this invention can be applied also to a network configuration which receives the data packet transmitted from the packet mode terminal of other networks again. In this case, what is necessary is to ask the predetermined station which manages positional information from the exchange (the gateway exchange is included) of arbitration the ** area area of a communication terminal, and just to constitute the data packet from other networks so that routing may be carried out to the exchange of ** area area through the gateway exchange.

[0033] ** The packet delivered and received between communication terminals has not only a data packet but the case of a control packet, and even if it attaches in this case, it can apply this invention similarly again.

[0034]

[Effect of the Invention] As explained above, when according to this invention a communication terminal moves and ** area area is changed, since it is not necessary to newly create control information required to perform packet communication with the communication terminal which has moved, in order to create that information, it becomes unnecessary for the exchange of a migration place to perform the exchange of the exchange of a communication terminal or a high order which has moved, and various information, and it can reduce traffic.

[0035] Moreover, when a communication terminal moves during packet communication and

changes ** area area, since the exchange of a migration place transmits the packet which is not sent [which was transmitted from the exchange of a moved material] to the communication terminal concerned which has moved, it becomes unnecessary to resend to the communication terminal of a transmission place from the communication terminal of transmitting [a non-sent packet] origin among the packets sent to the exchange of a moved material, and the efficient data transfer of it becomes possible.

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TECHNICAL FIELD

[Industrial Application] This invention is used for the migration packet communication system which performs mobile communication by packet switching, and relates to a suitable migration packet correspondence procedure.

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PRIOR ART

[Description of the Prior Art] In recent years, in the field of mobile communication, various development of the migration packet communication system which performs data communication by packet switching is carried out. Drawing 4 is the block diagram showing the example of a configuration of the conventional migration packet communication system. The conventional system is constituted by the home exchange 30, two or more subscriber exchanges (only henceforth the exchange) 31 and 32 connected to this home exchange 30, and two or more movable communication terminals 11 and 12, and .. as shown in this drawing. Each exchanges 31 and 32 and have the controllable area 21 and 22 and .. for communication terminals 11 and 12 and radio with .., respectively, and each communication terminals 11 and 12 and .. move between these area to arbitration. Moreover, the positional information which shows to which area each communication terminal is carrying out the ** area is brought together in the home exchange 30 through each exchanges 31 and 32 and .., and is managed at this home exchange 30.

[0003] Drawing 5 is the block diagram showing the configuration of the exchange 31 in the above-mentioned system (however, each exchanges 31 and 32 and are the same configurations.). Packet transmitter-receiver 31a to which the exchange 31 transmits and receives a packet among the home exchanges 30 as shown in this drawing, While dividing communication terminals 11 and 12 and the packet which should transmit to per segment To a packet communication terminals 11 and 12 and the segment received from A ***** packet assembly / division section 31b, It consists of segment transmitter-receiver 31e with packet communications control section 31c which controls packet communication, 31d of segment storage sections which memorize the non-sent segment of a packet, communication terminals 11 and 12, and which delivers and receives a segment by the radio signal in between.

[0004] In the above configurations, when transmitting a packet to another communication terminal from a certain communication terminal, after wireless transmission is carried out per segment at the exchange of ** area area and the data generated in the communication terminal of a transmitting agency are assembled by the packet at this exchange, they are sent to the home exchange 30. The home exchange 30 pinpoints the area as for which the communication terminal of a transmission place carries out a ** area, and transmits a packet to the exchange which manages this area. The exchange which received the packet divides the packet concerned per segment, and does wireless transmission of these to the communication terminal of a sequential transmission place. In this way, a packet is sent to the communication terminal of a transmission place, and transmission is completed when the communication terminal concerned returns an acknowledge signal.

[0005] Moreover, when it moves to the area 22 which the subordinate of another exchange 32 has from the area 21 which the subordinate of the exchange 31 concerned has while the communication terminal 11 received the packet from the exchange 31 as shown in drawing 6 , a communication terminal 11 notifies carrying out the ** area to the area 22 concerned to the exchange 32 of a migration place. The exchange 32 sends to the home exchange 30 by making this information into positional information. Then, if there is transmission of a packet from other communication terminals to this communication terminal 11, the home exchange 30 will transmit a packet to a communication terminal 11 through the exchange 32.

[0006] Here, with reference to the sequence diagram shown in drawing 7, actuation of the conventional system shown in drawing 6 is further explained to a detail. In drawing 7, the exchange 31 divides the data packet 1 sent to a communication terminal 11 from the communication terminal 12 of a transmitting agency per segment, and transmits to a communication terminal 11 one by one from the segment 1-1 generated first. While starting the time count according [the exchange 31] to a timer (illustration abbreviation) at this time, the non-sent segment is memorized until the confirmation-of-receipt signal of the completion of reception is acquired from a communication terminal 11. On the other hand, a communication terminal 11 will return the confirmation-of-receipt signal about the segment 1-1 concerned, if the above-mentioned segment 1-1 transmitted from the exchange 31 is received.

[0007] When ** area area is changed before a communication terminal 11 receives the consecutive segment 1-2 here, it becomes impossible to receive the data after the segment 1-2 concerned. On the other hand, since the confirmation of receipt after segment 1-2 is not obtained and the count of the above-mentioned timer passes the deadline of the exchange 31, it regards it as that in which a communication terminal 11 does not carry out a ** area to the area concerned, and cancels the non-sent segment after segment 1-2.

[0008] On the other hand, the exchange 32 which manages the area of a migration place notifies the home exchange 30 of transmitting the location registration demand from a communication terminal 11 to the home exchange 30, and the communication terminal 11 carrying out the ** area to the area of a local station. Moreover, the exchange 32 newly creates packet communications control information required to control packet communication with a communication terminal 11. If the data packet 2 addressed to communication terminal 11 is received from the communication terminal 12 of a transmitting agency after the home exchange 30 updates the positional information of a communication terminal 11 according to the above-mentioned location registration demand, it will transmit this packet 2 to the exchange 32 of a migration place. If the above-mentioned data packet 2 is received, the exchange 32 will divide this packet 2 per segment, and will transmit to a communication terminal 11 from the first segment 2-1.

[0009] A communication terminal 11 recognizes that reception of the above-mentioned data packet 1 is not completed by reception of this segment 2-1, and requires resending of a data packet 1 of the exchange 32 while it will return that confirmation-of-receipt signal, if the above-mentioned segment 2-1 is received. According to this, the exchange 32 makes demands for resending of a data packet 1 on the home exchange 30, and the home exchange 30 demands resending of a data packet 1 from the communication terminal 12 of a transmitting agency further.

[0010] And if a data packet 1 is transmitted to the exchange 32 through the home exchange 30 from a communication terminal 12, the exchange 32 will divide the data packet 1 which received per segment, and will resend to a communication terminal 11 from the first segment 1-1. In this way, completion of resending of a data packet 1 resumes transmission of a data packet 2.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, when according to this invention a communication terminal moves and ** area area is changed, since it is not necessary to newly create control information required to perform packet communication with the communication terminal which has moved, in order to create that information, it becomes unnecessary for the exchange of a migration place to perform the exchange of the exchange of a communication terminal or a high order which has moved, and various information, and it can reduce traffic.

[0035] Moreover, when a communication terminal moves during packet communication and changes ** area area, since the exchange of a migration place transmits the packet which is not sent [which was transmitted from the exchange of a moved material] to the communication terminal concerned which has moved, it becomes unnecessary to resend to the communication terminal of a transmission place from the communication terminal of transmitting [a non-sent packet] origin among the packets sent to the exchange of a moved material, and the efficient data transfer of it becomes possible.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, in the above-mentioned conventional system, when it moves between area and ** area area is changed while the communication terminal 11 received data as mentioned above, the exchange 31 of a moved material will eliminate the packet which is not sent [which transmission to a communication terminal 11 has not completed]. For this reason, from the communication terminal 12 which is the transmitting origin of a packet, in response to resending of the packet which is not sent [above-mentioned], the exchange 32 of a migration place needed to redo transmission to a communication terminal 11, and had the problem that the effectiveness of data transfer was bad. Moreover, the exchange of various information with a communication terminal 11 or the home exchange 30 was needed, and the exchange 32 of a migration place had the problem of causing increase of traffic in order to newly create the packet communications control information about a communication terminal 11.

[0012] This invention was made under such a background, reduces traffic, and aims at offering the migration packet correspondence procedure which makes efficient data transfer possible.

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MEANS

[Means for Solving the Problem] In order to solve the technical problem mentioned above, invention according to claim 1 It connects with a packet exchange network and becomes two or more migration communication terminals in which packet communication is possible from two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which it is the correspondence procedure applied to migration packet communication system, and said communication terminal moves, and controls the area which carries out a ** area is changed, the exchange of a moved material Control information required for packet communication with said communication terminal which moved is transmitted to the exchange of a migration place, and the exchange of said migration place is characterized by continuing packet communication with said communication terminal which moved based on said transmitted control information.

[0014] Moreover, two or more migration communication terminals in which invention according to claim 2 has possible packet communication, It connects with a packet exchange network and consists of two or more exchanges which have the area where each controls radio with said communication terminal. Each communication terminal Each exchanges packets mutually through the exchange which controls the area which carries out a ** area. When the exchange which is the correspondence procedure applied to migration packet communication system, moves while said communication terminal receives a packet, and controls the area which carries out a ** area is changed, the exchange of a moved material The packet which is not sent [which should transmit to said communication terminal which moved] is transmitted to the exchange of a migration place, and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved].

[0015] Moreover, invention according to claim 3 is transmitted to the exchange of said migration place in invention according to claim 2 with the packet whose control information which the exchange of said migration origin needs for packet communication with said communication terminal which moved is not sent [said], and the exchange of said migration place is characterized by said thing [transmitting the packet which is not sent / which was transmitted / to said communication terminal which moved] based on said transmitted control information.

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OPERATION

[Function] It becomes unnecessary for the exchange of a migration place to newly create control information required to perform packet communication with the communication terminal which has moved from the area of an other station according to invention according to claim 1. In order to create the above-mentioned control information, it becomes unnecessary thereby, for the exchange of a migration place to perform the exchange of the exchange of a communication terminal or a high order which has moved, and various information.

[0017] Moreover, according to invention according to claim 2, the exchange of a migration place transmits the packet which is not sent [which was transmitted from the exchange of a moved material] to the communication terminal concerned which has moved. It becomes unnecessary thereby, to resend a non-sent packet to the communication terminal of a transmission place from the communication terminal of a transmitting agency among the packets sent to the exchange of a moved material.

[0018] Moreover, according to invention according to claim 3, in addition to the operation by invention according to claim 2, the operation by invention according to claim 1 is also done so.

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EXAMPLE

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

(1) The block diagram 1 of an example is a block diagram showing the configuration of the migration packet communication system by one example of this invention. In this drawing, the same sign is given to the part which is common to each part of the conventional example shown in drawing 4 and drawing 6, and explanation is omitted. Moreover, the point that the example shown in this drawing differs from the above-mentioned conventional example is in the place where exchange 31' of a moved material transmits the segment which is not sent [packet communications control information and] to exchange 32' of a migration place, when it moves to the area which the subordinate of exchange 32' has while the communication terminal 11 received the packet (however, segment unit) transmitted from exchange 31'.

[0020] Drawing 2 is the block diagram showing the configuration of exchange 31' by this example (however, each exchange 31', 32', and are the same configurations.). The point that exchange 31' shown in this drawing differs from the exchange 31 which showed drawing 5 is in the place equipped with 31f of packet related information transmitter-receivers holding such information which delivered and received the segment which is not sent [packet communications control information and] among other exchanges, and was received. About other parts, since it is the same as that of each part shown in drawing 5, the same sign is attached and explanation is omitted.

[0021] (2) Explain actuation of this example below actuation of an example with reference to the sequence diagram shown in drawing 3. In drawing 3, exchange 31' divides the data packet 1 sent to a communication terminal 11 from the communication terminal 12 of a transmitting agency per segment like the above-mentioned conventional example, and carries out wireless transmission from the segment 1-1 generated first to a communication terminal 11 one by one. At this time, exchange 31' memorizes the non-sent segment until the confirmation-of-receipt signal of the completion of reception is acquired from a communication terminal 11. On the other hand, a communication terminal 11 will return the confirmation-of-receipt signal about the segment 1-1 concerned, if the above-mentioned segment 1-1 transmitted from exchange 31' is received.

[0022] If it moves to the area which the subordinate of exchange 32' has before a communication terminal 11 receives the consecutive segment 1-2 here, exchange 32' of a migration place will notify the home exchange 30 of transmitting the location registration demand from a communication terminal 11 to the home exchange 30, and the communication terminal 11 carrying out the ** area to the area of a local station. And the home exchange 30 notifies that the exchange which manages the area of the migration origin of a communication terminal 11 is exchange 31' to exchange 32' with a location registration response, after updating the positional information of a communication terminal 11 according to this location registration demand.

[0023] According to this notice, exchange 32' requires a transfer of packet related information from exchange 31' of a moved material. According to this demand, exchange 31' transmits the non-sent segment after the packet communications control information about a communication terminal 11, and segment 1-2 to exchange 32'. Exchange 32' carries out wireless transmission of the non-sent segment to a communication terminal 11 one by one based on the acquired packet

communications control information. In this way, whenever a communication terminal 11 receives a segment, it returns a confirmation-of-receipt response to exchange 32', and the arrival of a non-sent segment completes it.

[0024] On the other hand, if the data packet 2 addressed to communication terminal 11 is received from the communication terminal 12 which is the transmitting origin of a packet after the home exchange 30 updates the positional information of a communication terminal 11, it will transmit this packet 2 to exchange 32' of a migration place. If the above-mentioned data packet 2 is received, exchange 32' will divide this packet 2 per segment, and will carry out wireless transmission from the first segment 2-1 to a communication terminal 11.

[0025] Thus, when according to this example a communication terminal 11 moves during reception of a packet between area and changes ** area area Since the segment which is not sent [which has not received a message in a communication terminal 11 among the packets transmitted to exchange 31' of a moved material] is transmitted to exchange 32' of a migration place from this exchange 31' It becomes unnecessary to resend from the communication terminal 12 of transmitting [arrival-of-the-mail the packet which is not completed / concerned] origin, and efficient data transfer becomes possible.

[0026] Moreover, since packet communications control information is transmitted to exchange 32' of a migration place from exchange 31' of a moved material, in order to newly create packet communications control information at exchange 32' of a migration place, it becomes unnecessary to exchange the home exchange 30, a communication terminal 11, and various information, and traffic can be reduced as a result.

[0027] (3) This invention is a thing which is an example of modification and which is not limited to the above-mentioned example, for example, includes the following examples of modification.

** Like the above-mentioned example, only a non-sent segment may not be transmitted to exchange 32' of a migration place from exchange 31' of a moved material, but the whole non-sent packet may be transmitted in a packet unit. In this case, what is necessary is to divide the packet which is not sent [which was transmitted in exchange 32' of a migration place] per segment, and just to carry out wireless transmission to a communication terminal 11.

[0028] ** Although the method which divides a packet per segment further and transmits it as a wireless interface between the exchange and a communication terminal was adopted in the above-mentioned example, this invention is not limited to such a method, but can apply the packet itself also to the method which carries out wireless transmission. In this case, naturally between the exchanges is transmitted to non-sent data per packet.

[0029] That is, this invention will not be limited to the unit of data, if the data divided into the predetermined unit are delivered and received between the exchange and a communication terminal. Therefore, the word of the "packet" used for the claim does not mean the packet of the narrow sense used in the example, and is a large concept of "the data divided into the predetermined unit."

[0030] ** The home exchange 30 does not notify that the exchange which manages the area of a moved material is exchange 31' to exchange 32' of a migration place like the above-mentioned example, but you may make it a communication terminal 11 notify.

[0031] ** Like the above-mentioned example, the home exchange 30 may not manage the positional information of each communication terminal, but you may constitute so that another station which is different in the home exchange 30 may manage the positional information of each communication terminal. In this case, the home exchange 30 becomes possible [recognizing the ** area area of a communication terminal] by receiving a notice from the station which manages the above-mentioned positional information, or asking the station concerned.

[0032] ** Not only the network configuration that makes the home exchange 30 like the above-mentioned example top-most vertices but each exchange 31' and 32' are connected with other networks through the gateway exchange, and this invention can be applied also to a network configuration which receives the data packet transmitted from the packet mode terminal of other networks again. In this case, what is necessary is to ask the predetermined station which manages positional information from the exchange (the gateway exchange is included) of

arbitration the ** area area of a communication terminal, and just to constitute the data packet from other networks so that routing may be carried out to the exchange of ** area area through the gateway exchange.

[0033] ** The packet delivered and received between communication terminals has not only a data packet but the case of a control packet, and even if it attaches in this case, it can apply this invention similarly again.

[Translation done.]

*** NOTICES ***

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1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the migration packet communication system by one example of this invention.

[Drawing 2] It is the block diagram showing the configuration of the exchange of this example.

[Drawing 3] It is a sequence diagram for explaining actuation of this example.

[Drawing 4] It is the block diagram showing the example of a configuration of the conventional migration packet communication system.

[Drawing 5] It is the block diagram showing the configuration of the exchange of this system.

[Drawing 6] It is a block diagram for explaining the path change actuation in this system.

[Drawing 7] It is a sequence diagram for explaining the detail of actuation of this system.

[Description of Notations]

11 12 Communication terminal

30 Home Exchange

31, 31', 32, 32' Subscriber exchange

31a Packet transmitter-receiver

31b Packet division / assembly section

31c Packet control section

31d Segment storage section

31e Segment transmitter-receiver

31f Packet related information transmitter-receiver

[Translation done.]

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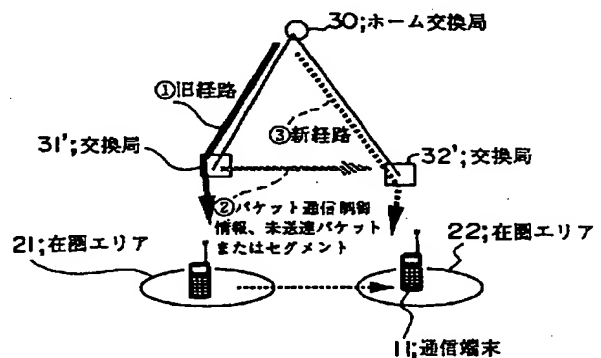
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(54) 【発明の名称】 移動パケット通信方法

(57) 【要約】

【目的】 トラヒックを低減し、効率的なデータ転送を可能とする移動パケット通信方法を提供する。

【構成】 通信端末11が交換局31'から送信されるパケットを受信中に交換局32'の配下にあるエリアへ移動した場合、移動元の交換局31'がパケット通信制御情報と未送達のパケットを移動先の交換局32'へ転送するようにした。これにより、移動先の交換局32'は、新たにパケット通信制御情報を作成するために通信端末11やホーム交換局30と情報をやり取りする必要がなくなるとともに、送信元の通信端末から未送達のパケットを再送する必要がなくなる。



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【特許請求の範囲】

【請求項1】 パケット通信が可能な複数の移動通信端末と、

パケット交換網に接続され、各々が前記通信端末との無線通信を制御するエリアを有する複数の交換局とからなり、

各通信端末は、各々が在圏するエリアを制御する交換局を介して互いにパケットを交換する、移動パケット通信システムに適用される通信方法であって、

前記通信端末が移動し、在圏するエリアを制御する交換局が変更された場合、

移動元の交換局は、前記移動した通信端末とのパケット通信に必要な制御情報を移動先の交換局へ転送し、

前記移動先の交換局は、前記転送された制御情報に基づき前記移動した通信端末とのパケット通信を継続することを特徴とする移動パケット通信方法。

【請求項2】 パケット通信が可能な複数の移動通信端末と、

パケット交換網に接続され、各々が前記通信端末との無線通信を制御するエリアを有する複数の交換局とからなり、

各通信端末は、各々が在圏するエリアを制御する交換局を介して互いにパケットを交換する、移動パケット通信システムに適用される通信方法であって、

前記通信端末がパケットを受信中に移動し、在圏するエリアを制御する交換局が変更された場合、

移動元の交換局は、前記移動した通信端末へ送信すべき未送達のパケットを移動先の交換局へ転送し、

前記移動先の交換局は、前記転送された未送達のパケットを前記移動した通信端末へ送信することを特徴とする移動パケット通信方法。

【請求項3】 前記移動元の交換局は、前記移動した通信端末とのパケット通信に必要な制御情報を前記未送達のパケットとともに前記移動先の交換局へ転送し、

前記移動先の交換局は、前記転送された制御情報に基づき、前記転送された未送達のパケットを前記移動した通信端末へ送信することを特徴とする請求項2記載の移動パケット通信方法。

【発明の詳細な説明】

【0001】

【産業上の利用分野】この発明は、パケット交換により移動通信を行う移動パケット通信システムに用いて好適な移動パケット通信方法に関する。

【0002】

【従来の技術】近年、移動通信の分野においては、パケット交換によりデータ通信を行う移動パケット通信システムが各種開発されている。図4は、従来の移動パケット通信システムの構成例を示すブロック図である。この図に示すように、従来のシステムは、ホーム交換局30、このホーム交換局30に接続される複数の加入者交

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換局（以下、単に交換局という）31、32、……、および複数の移動可能な通信端末11、12、……によって構成されている。各交換局31、32、……は、それぞれ通信端末11、12、……との無線通信を制御可能なエリア21、22、……を有しており、各通信端末11、12、……は、これらエリア間を任意に移動する。また、各々の通信端末がどのエリアに在圏しているかを示す位置情報は、各交換局31、32、……を介してホーム交換局30に集められ、このホーム交換局30にて管理される。

【0003】図5は、上記システムにおける交換局31の構成を示すブロック図である（ただし、各交換局31、32、……は同一構成である。）。同図に示すように、交換局31は、ホーム交換局30との間でパケットを送受信するパケット送受信機31a、通信端末11、12、……へ送信すべきパケットをセグメント単位に分割する一方、通信端末11、12、……から受信したセグメントをパケットに組み立てるパケット組立/分割部31b、パケット通信を制御するパケット通信制御部31c、パケットの未送達セグメントを記憶するセグメント記憶部31d、および通信端末11、12、……との間で無線信号によりセグメントを授受するセグメント送受信機31eから構成されている。

【0004】上記のような構成において、ある通信端末から別の通信端末へパケットを送信する場合、送信元の通信端末にて発生したデータは、在圏エリアの交換局へセグメント単位で無線送信され、該交換局にてパケットに組み立てられた後、ホーム交換局30へ送られる。ホーム交換局30は、送信先の通信端末が在圏するエリアを特定し、該エリアを管理する交換局へパケットを送信する。パケットを受信した交換局は、当該パケットをセグメント単位に分割し、これらを順次送信先の通信端末へ無線送信する。こうして、送信先の通信端末にパケットが送られ、当該通信端末が確認信号を返送することにより送信が完了する。

【0005】また、図6に示すように、通信端末11が交換局31からパケットを受信中に当該交換局31の配下にあるエリア21から別の交換局32の配下にあるエリア22へ移動した場合、通信端末11は、移動先の交換局32に対し、当該エリア22に在圏していることを通知する。交換局32は、この情報を位置情報としてホーム交換局30へ送る。その後、この通信端末11に対して他の通信端末からパケットの送信があると、ホーム交換局30は、交換局32を介して通信端末11へパケットを送信する。

【0006】ここで、図7に示すシーケンス図を参照し、図6に示した従来のシステムの動作をさらに詳細に説明する。図7において、交換局31は、送信元の通信端末12から通信端末11宛に送られるデータパケット1をセグメント単位に分割し、最初に生成されるセグメ

ント1-1から順次通信端末11へ送信する。このとき、交換局31は、タイマ（図示略）によるタイムカウントを開始するとともに、通信端末11から受信完了の送達確認信号が得られるまで未送達のセグメントを記憶しておく。一方、通信端末11は、交換局31から送信される上記セグメント1-1を受信すると、当該セグメント1-1についての送達確認信号を返送する。

【0007】ここで、通信端末11が後続のセグメント1-2を受信する前に在圏エリアを変更すると、当該セグメント1-2以後のデータを受信できなくなる。一方、交換局31は、セグメント1-2以後の送達確認が得られないために上記タイマのカウントがタイムアップすることから通信端末11が当該エリアに在圏しないものとみなし、セグメント1-2以後の未送達セグメントを破棄する。

【0008】一方、移動先のエリアを管理する交換局32は、通信端末11からの位置登録要求をホーム交換局30へ転送し、通信端末11が自局のエリアに在圏していることをホーム交換局30へ通知する。また、交換局32は、通信端末11とのパケット通信を制御するのに必要なパケット通信制御情報を新たに作成する。ホーム交換局30は、上記位置登録要求に応じて通信端末11の位置情報を更新した後、送信元の通信端末12から通信端末11宛のデータパケット2を受信すると、該パケット2を移動先の交換局32へ転送する。交換局32は、上記データパケット2を受信すると、該パケット2をセグメント単位に分割し、最初のセグメント2-1より通信端末11へ送信する。

【0009】通信端末11は、上記セグメント2-1を受信すると、その送達確認信号を返送するとともに、このセグメント2-1の受信により前述のデータパケット1の受信が完結していないことを認識し、交換局32に対してデータパケット1の再送を要求する。これに応じて、交換局32は、ホーム交換局30に対してデータパケット1の再送を要求し、さらにホーム交換局30は送信元の通信端末12に対してデータパケット1の再送を要求する。

【0010】そして、データパケット1が通信端末12からホーム交換局30を経て交換局32へ送信されると、交換局32は、受信したデータパケット1をセグメント単位に分割し、最初のセグメント1-1から通信端末11へ再送する。こうして、データパケット1の再送が完了すると、データパケット2の送信を再開する。

【0011】

【発明が解決しようとする課題】ところで、上記従来のシステムにおいては、前述したように、通信端末11がデータを受信中にエリア間を移動して在圏エリアを変更した場合、移動元の交換局31は、通信端末11への送信が完了していない未送達のパケットを消去してしまう。このため、移動先の交換局32は、パケットの送信

元である通信端末12から上記未送達のパケットの再送を受けて、通信端末11への送信をやり直す必要があり、データ転送の効率が悪いという問題があった。また、移動先の交換局32は、通信端末11に関するパケット通信制御情報を新たに作成するため、通信端末11やホーム交換局30との各種情報のやり取りが必要となり、トラヒックの増大を招くという問題があった。

【0012】この発明は、このような背景の下になされたもので、トラヒックを低減し、効率的なデータ転送を可能とする移動パケット通信方法を提供することを目的としている。

【0013】

【課題を解決するための手段】上述した課題を解決するために、請求項1記載の発明は、パケット通信が可能な複数の移動通信端末と、パケット交換網に接続され、各々が前記通信端末との無線通信を制御するエリアを有する複数の交換局とからなり、各通信端末は、各々が在圏するエリアを制御する交換局を介して互いにパケットを交換する、移動パケット通信システムに適用される通信方法であって、前記通信端末が移動し、在圏するエリアを制御する交換局が変更された場合、移動元の交換局は、前記移動した通信端末とのパケット通信に必要な制御情報を移動先の交換局へ転送し、前記移動先の交換局は、前記転送された制御情報に基づき前記移動した通信端末とのパケット通信を継続することを特徴としている。

【0014】また、請求項2記載の発明は、パケット通信が可能な複数の移動通信端末と、パケット交換網に接続され、各々が前記通信端末との無線通信を制御するエリアを有する複数の交換局とからなり、各通信端末は、各々が在圏するエリアを制御する交換局を介して互いにパケットを交換する、移動パケット通信システムに適用される通信方法であって、前記通信端末がパケットを受信中に移動し、在圏するエリアを制御する交換局が変更された場合、移動元の交換局は、前記移動した通信端末へ送信すべき未送達のパケットを移動先の交換局へ転送し、前記移動先の交換局は、前記転送された未送達のパケットを前記移動した通信端末へ送信することを特徴としている。

【0015】また、請求項3記載の発明は、請求項2記載の発明において、前記移動元の交換局は、前記移動した通信端末とのパケット通信に必要な制御情報を前記未送達のパケットとともに前記移動先の交換局へ転送し、前記移動先の交換局は、前記転送された制御情報に基づき、前記転送された未送達のパケットを前記移動した通信端末へ送信することを特徴としている。

【0016】

【作用】請求項1記載の発明によれば、移動先の交換局は、他局のエリアから移動してきた通信端末とのパケット通信を行うのに必要な制御情報を新たに作成する必要

がなくなる。これにより、移動先の交換局は、上記制御情報を作成するために、移動してきた通信端末や上位の交換局と各種情報のやり取りを行う必要がなくなる。

【0017】また、請求項2記載の発明によれば、移動先の交換局は、移動元の交換局から転送された未送達のバケットを当該移動してきた通信端末へ送信する。これにより、移動元の交換局に送達したバケットのうち送信先の通信端末に未送達のバケットを送信元の通信端末から再送する必要がなくなる。

【0018】また、請求項3記載の発明によれば、請求項2記載の発明による作用に加え、請求項1記載の発明による作用をも奏する。

【0019】

【実施例】以下、図面を参照して、この発明の実施例について説明する。

(1) 実施例の構成

図1はこの発明の一実施例による移動バケット通信システムの構成を示すブロック図である。この図において、図4および図6に示した従来例の各部と共通する部分には同一符号を付し、説明を省略する。また、この図に示す実施例と前述の従来例とが異なる点は、通信端末11が交換局31'から送信されるバケット（ただし、セグメント単位）を受信中に交換局32'の配下にあるエリアへ移動した場合に、移動元の交換局31'がバケット通信制御情報と未送達のセグメントを移動先の交換局32'へ転送するところにある。

【0020】図2は、本実施例による交換局31'の構成を示すブロック図である（ただし、各交換局31'、32'、……は同一構成である。）。この図に示す交換局31'が、図5に示した交換局31と異なる点は、他の交換局との間でバケット通信制御情報と未送達のセグメントを授受し、受信したこれらの情報を保持するバケット関連情報送受信機31fを備えたところにある。その他の部分については、図5に示した各部と同様であるので、同一符号を付し、説明を省略する。

【0021】(2) 実施例の動作

以下、図3に示すシーケンス図を参照し、本実施例の動作を説明する。図3において、交換局31'は、前述の従来例と同様、送信元の通信端末12から通信端末11宛に送られるデータバケット1をセグメント単位に分割し、最初に生成されるセグメント1-1から順次通信端末11へ無線送信する。このとき、交換局31'は、通信端末11から受信完了の送達確認信号が得られるまで未送達のセグメントを記憶しておく。一方、通信端末11は、交換局31'から送信される上記セグメント1-1を受信すると、当該セグメント1-1についての送達確認信号を返送する。

【0022】ここで、通信端末11が後続のセグメント1-2を受信する前に交換局32'の配下にあるエリアに移動すると、移動先の交換局32'は、通信端末11

からの位置登録要求をホーム交換局30へ転送し、通信端末11が自局のエリアに在圏していることをホーム交換局30へ通知する。そして、ホーム交換局30は、この位置登録要求に応じて通信端末11の位置情報を更新した後、通信端末11の移動元のエリアを管理する交換局が交換局31'であることを位置登録応答とともに交換局32'へ通知する。

【0023】この通知に応じて、交換局32'は、移動元の交換局31'に対し、バケット関連情報の転送を要求する。この要求に応じ、交換局31'は、通信端末11に関するバケット通信制御情報とセグメント1-2以後の未送達セグメントを交換局32'へ転送する。交換局32'は、取得したバケット通信制御情報に基づき、未送達セグメントを順次通信端末11へ無線送信する。こうして、通信端末11は、セグメントを受信する毎に送達確認応答を交換局32'へ返送し、未送達のセグメントの着信が完了する。

【0024】一方、ホーム交換局30は、通信端末11の位置情報を更新した後、バケットの送信元である通信端末12から通信端末11宛のデータバケット2を受信すると、該バケット2を移動先の交換局32'へ転送する。交換局32'は、上記データバケット2を受信すると、該バケット2をセグメント単位に分割し、最初のセグメント2-1より通信端末11へ無線送信する。

【0025】このように、本実施例によれば、通信端末11がバケットの受信中にエリア間を移動し在圏エリアを変更した場合に、移動元の交換局31'に転送されたバケットのうち通信端末11に着信していない未送達のセグメントを該交換局31'から移動先の交換局32'へ転送するので、当該着信未完了のバケットを送信元の通信端末12から再送する必要がなくなり、効率的なデータ転送が可能となる。

【0026】また、バケット通信制御情報を移動元の交換局31'から移動先の交換局32'へ転送するので、移動先の交換局32'にて新たにバケット通信制御情報を作成するためにホーム交換局30や通信端末11と各種情報をやり取りする必要がなくなり、結果的にトラヒックを低減できる。

【0027】(3) 変更例

なお、本発明は、上記実施例に限定されず、例えば以下のような変更例を含むものである。

①上記実施例のように、移動元の交換局31'から移動先の交換局32'へ未送達のセグメントのみを転送するのではなく、バケット単位で未送達のバケット全体を転送してもよい。この場合、移動先の交換局32'にて転送された未送達のバケットをセグメント単位に分割し、通信端末11へ無線送信すればよい。

【0028】②上記実施例では、交換局と通信端末との間の無線インタフェースとして、バケットをさらにセグメント単位に分割して転送する方式を採用したが、本発

明はこのような方式に限定されず、バケットそのものを無線送信する方式にも適用可能である。この場合、未送達のデータは、当然にバケット単位で交換局間を転送される。

【0029】つまり、本発明は、所定の単位に分割されたデータを交換局と通信端末との間で授受するのであれば、データの単位に限定されるものではない。したがって、特許請求の範囲に用いた「バケット」の語は、実施例で用いた狭義のバケットを意味するものではなく、「所定の単位に分割されたデータ」という広い概念である。

【0030】③上記実施例のように、移動元のエリアを管理する交換局が交換局31'であることをホーム交換局30が移動先の交換局32'へ通知するのではなく、通信端末11が通知するようにしてもよい。

【0031】④上記実施例のように、各通信端末の位置情報をホーム交換局30が管理するのではなく、ホーム交換局30とは異なる別の局が各通信端末の位置情報を管理するよう構成してもよい。この場合、ホーム交換局30は、上記位置情報を管理する局から通知を受けるか、あるいは当該局に問い合わせることにより、通信端末の在圏エリアを認識することが可能となる。

【0032】⑤また、本発明は、上記実施例のようなホーム交換局30を頂点とする網構成に限らず、各交換局31', 32'がゲートウェイ交換局を介して他網と接続され、他網のバケット端末から送信されるデータバケットを受信するよう網構成にも適用可能である。この場合、任意の交換局(ゲートウェイ交換局を含む)から位置情報を管理する所定の局へ通信端末の在圏エリアを問い合わせ、他網からのデータバケットはゲートウェイ交換局を介し在圏エリアの交換局にルーティングされるよう構成すればよい。

【0033】⑥また、通信端末間で授受されるバケットは、データバケットに限らず、制御バケットの場合もあり、この場合についても同様に本発明を適用可能である。

【0034】

【発明の効果】以上説明したように、この発明によれ

ば、通信端末が移動し、在圏エリアを変更した場合に、移動先の交換局は、移動してきた通信端末とのバケット通信を行うのに必要な制御情報を新たに作成する必要がないので、その情報を作成するために、移動してきた通信端末や上位の交換局と各種情報のやり取りを行う必要がなくなり、トラヒックを低減できる。

【0035】また、通信端末がバケット通信中に移動し、在圏エリアを変更した場合に、移動先の交換局は、移動元の交換局から転送された未送達のバケットを当該移動してきた通信端末へ送信するので、移動元の交換局に送達したバケットのうち送信先の通信端末に未送達のバケットを送信元の通信端末から再送する必要がなくなり、効率的なデータ転送が可能となる。

【図面の簡単な説明】

【図1】 この発明の一実施例による移動バケット通信システムの構成を示すブロック図である。

【図2】 同実施例の交換局の構成を示すブロック図である。

【図3】 同実施例の動作を説明するためのシーケンス図である。

【図4】 従来の移動バケット通信システムの構成例を示すブロック図である。

【図5】 同システムの交換局の構成を示すブロック図である。

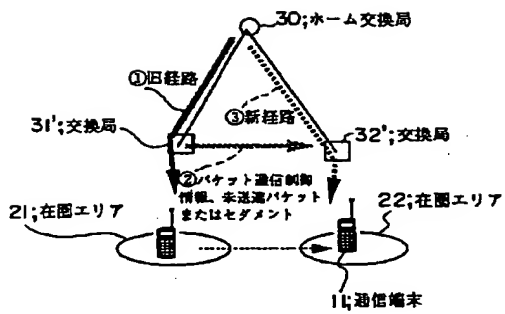
【図6】 同システムにおける経路切替動作を説明するためのブロック図である。

【図7】 同システムの動作の詳細を説明するためのシーケンス図である。

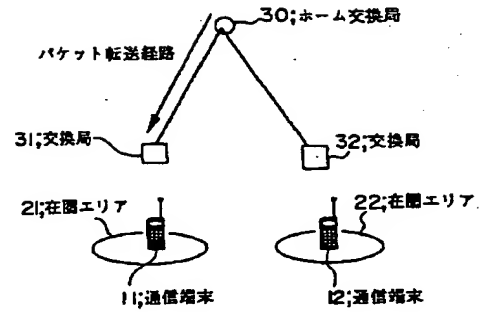
【符号の説明】

- 11, 12 通信端末
- 30 ホーム交換局
- 31, 31', 32, 32' 加入者交換局
- 31a バケット送受信機
- 31b バケット分割/組立部
- 31c バケット制御部
- 31d セグメント記憶部
- 31e セグメント送受信機
- 31f バケット関連情報送受信機

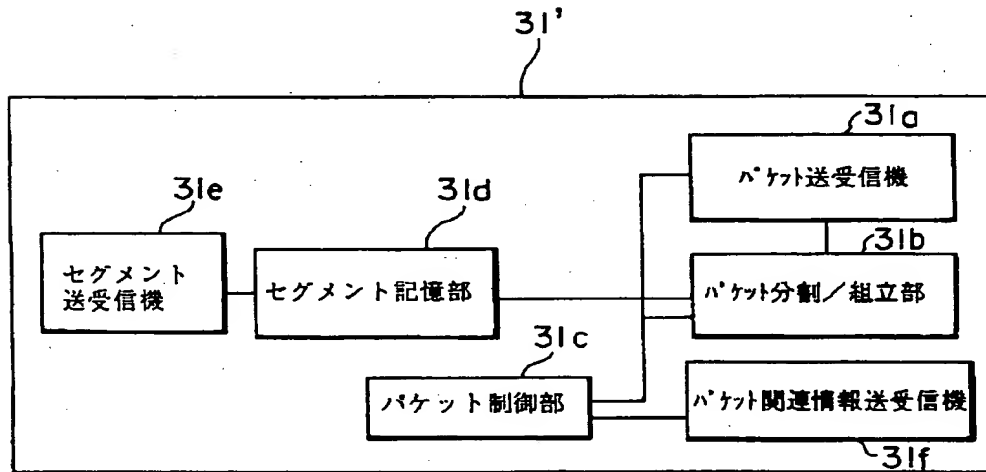
【図1】



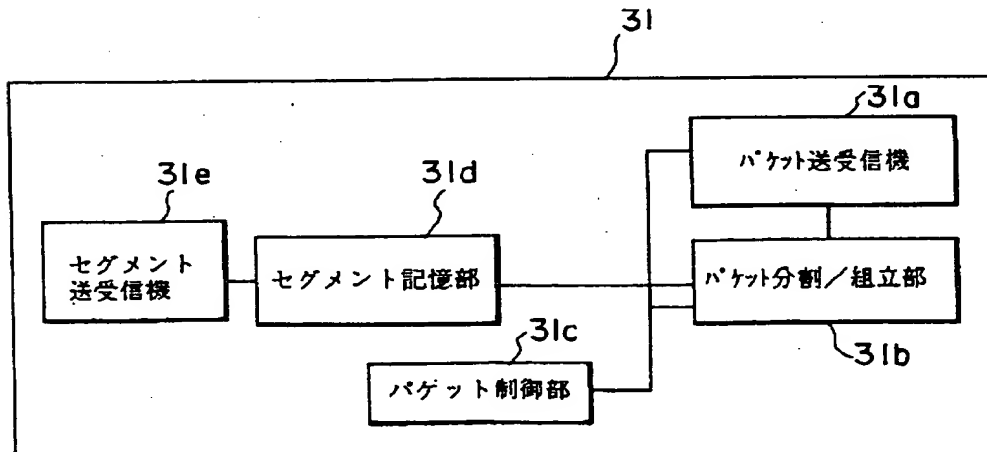
【図4】



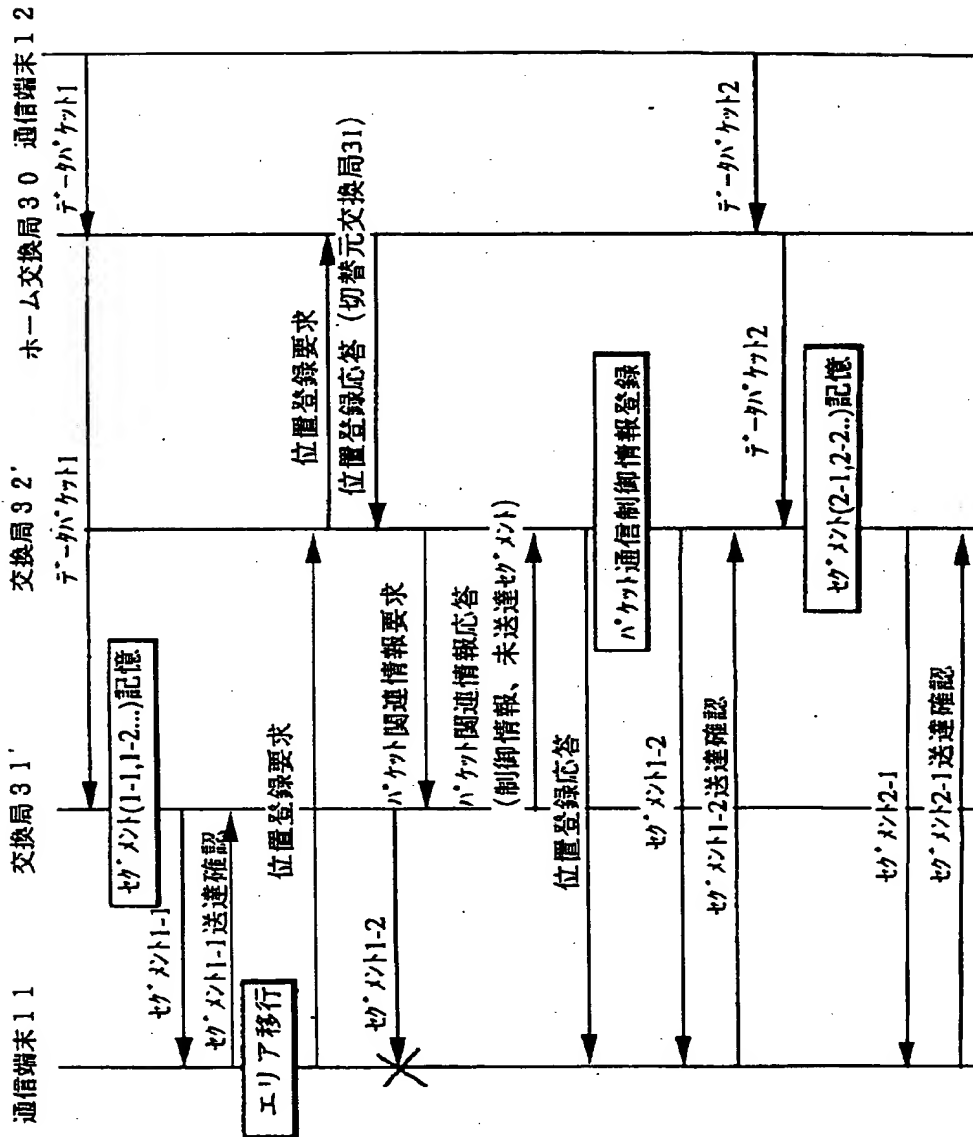
【図2】



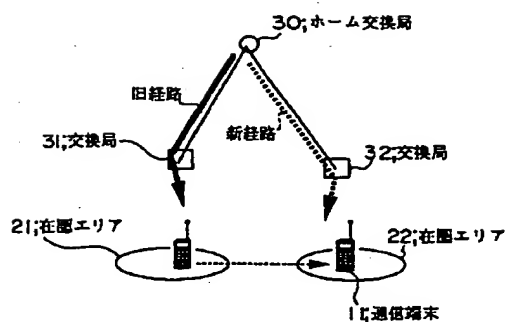
【図5】



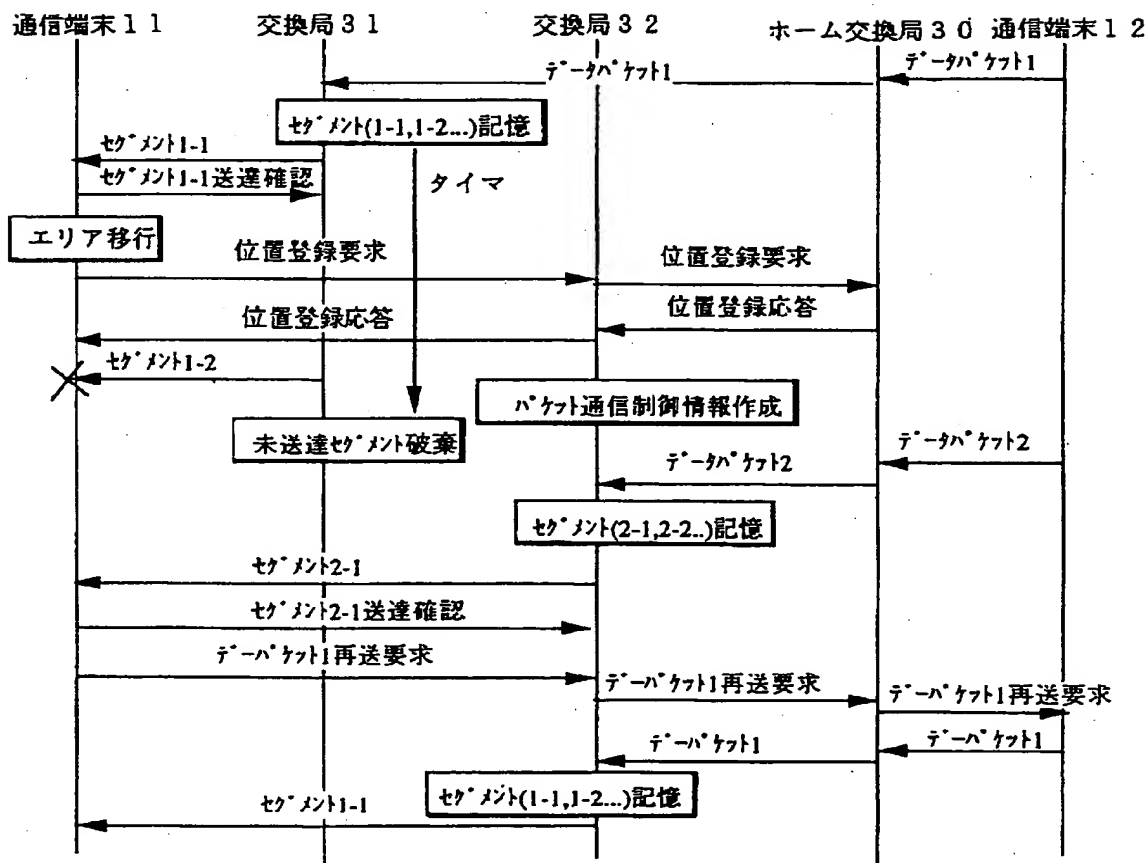
【図3】



【図6】



【圖 7】



フロントページの続き

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